PROJECTED IMPROVEMENTS TO

THE VERMONT RAILWAY WESTERN CORRIDOR

JANUARY 2010

BACKGROUND

In Act 50 of the 2009 Vermont legislature, the Agency of Transportation was directed as follows:

> *Sec. 113. 2006 STATE RAIL & POLICY PLAN*
>
> *Consistent with the 2006 State Rail & Policy Plan, the agency shall estimate the total cost of (1) upgrading the western corridor rail line for passenger rail service to and from Burlington, Rutland, Bennington and Albany, New York, (2) operating a passenger rail service from Burlington to Rutland connecting to White Hall, New York and (3) operating a passenger rail service from Burlington to Rutland to Bennington connecting to Albany, New York. The agency shall present its analysis to the House and Senate committees on Transportation by January 15, 2010*

The information contained herein is based on the most updated data available and includes estimates submitted to the Federal Railroad Administration (FRA) as part of the ARRA "High Speed Intercity Passenger Rail" (HSIPR) grant applications. The Agency of Transportation (VTrans) submitted 3 grant applications under the HSIPR program between August 23, 2009 and October 2, 2009.

In discussions with the FRA prior to submittal of our applications, it became clear that the route south of Rutland through Hoosick Junction and Mechanicville, NY to Schenectady and Albany-Rensselaer needed to be further vetted. The FRA pointed out that in order for us to submit an application for funds to improve the section of rail in Vermont (Rutland-Hoosick Junction); we would need to have all the agreements with the operating railroads on the entire route in place. Unfortunately there was no current information on what improvements the out of state railroads would require in order to initiate passenger service. Consequently, we reached out to New York State Department of Transportation (NYSDOT) to see if they would be willing to work with VTrans to determine those needs and also develop the required agreements for access to those lines for Intercity Passenger Rail Service. An MOU was established with New York that allowed us to submit a joint application for ARRA HSIPR funding to develop a new concept for passenger rail service to Southwestern Vermont and eastern New York State. This joint "planning" application was submitted to FRA on August 23, 2009 under "Track 3" of the HSIPR program, requesting $500,000 in federal funds to be matched by the both states at $250,000 each. NYSDOT and VTrans share a vision of multiple passenger rail frequencies over the route South of Rutland.

In our discussion with New York State it also became apparent that both States would be well served by retaining the Ethan Allen Express in its current route configuration (Albany-Schenectady-Saratoga Springs-Fort Edward-Castleton-Rutland), and extending that train north to Burlington. This concept, including the above-mentioned vision of multiple passenger rail frequencies over the route south of Rutland, was very appealing to both State DOTs as well as the FRA. Thus an improvement project to the Clarendon Pittsford Railroad (CLP)between Whitehall, NY and Rutland, Vermont was developed,

along with the improvements to the Vermont Railway (VTR) from Rutland to Burlington that would allow passenger rail service to be established to Burlington. This project is referred to in the ARRA HSIPR "Track 2" application as the **"Ethan Allen Express Improvements and Extension"** project. The grant application was submitted to FRA on October 2, 2009. The total project cost (Final Design plus Construction) is estimated at $70,509,000, and consists of $68,509,000 in federal dollars matched with a commitment of $2,000,000 from the state and the railroad. The details of the construction estimates for the "Track 2" application are in attachments "A" and "B".

The third HSIPR grant application was submitted under the "Track 1" program and included work on the New England Central Railroad. It does not include any work on the western corridor and therefore warrants no further discussion in this report.

ESTIMATED COSTS

(1) Estimated total cost of upgrading the western corridor rail line for passenger rail service to and from Burlington, Rutland, Bennington and Albany, New York

A significant portion of the estimated cost to upgrade the western corridor rail line for passenger service was included in Vermont's "Track 2" application for ARRA funding, and as such detailed estimates were developed. The Rail unit utilized a consultant to update data that was collected in a physical assessment of the VTR in late 2004. After extensive discussions between the Railroad and the Agency, it was agreed that upon completion of the proposed estimate of improvements Amtrak would be able to operate at FRA Class III (60MPH) speeds through that segment. Note that the estimates below do not include any projects that are currently funded in the 2010 capital program.

Whitehall (NY) to Rutland (CLP) to Burlington (VTR): This segment is broken into two areas for improvements: Whitehall - Rutland and Rutland – Burlington. Total estimate for the project is $70,509,000.

Whitehall (NY) to Rutland (CLP) See Attachment "A". Total estimate for track improvements is $17,745,000.

Rutland to Burlington (VTR): See Attachment "B". Total estimate for track improvements is $49,519,000.

Bridge work and Grade Crossings: Total estimate for bridge work, including contingency and engineering, is $2,145,000 for both segments. Total estimate for grade crossings is $1,100,000 for both segments.

Hoosick Junction to Rutland (VTR): This segment is broken into two areas for improvements: Hoosick Junction – Manchester (Southern) and Manchester – Rutland (Central). Total estimate for track improvements is $37,883,000.

Hoosick Junction – Manchester (Southern): There was a considerable amount of work completed ($16M) on the southern section between 1999 and 2002. This included installation of 21 miles of continuously welded rail (CWR), new crossties and ballast, and removal of and replacement of turnouts. In addition, some crossings have been upgraded through that area. There is still some work to be completed in that section, including completion of the rail replacement, bridge and signal improvements. These improvements will bring the line between Hoosick Junction and Manchester up to FRA class III standards to operate passenger rail at 60MPH. Attachment "C" depicts the current estimate of $8,786,000 for this work.

Manchester – Rutland (Central): This segment has seen the least improvements to date. However, with the increase in regular freight traffic over the line initiated in 2008 to utilize the interchange with PanAm Railways at Hoosick Junction, the agency completed two significant cross tie replacement projects. This work was an attempt to increase the margin of operating safety for those operations. Although these projects did contribute to the improvements required to operate passenger rail service, the amount of work to be completed through this 31 mile segment remains significant. Attachment "D" shows the current estimate of $29,097,000 for these improvements.

Hoosick Junction – Mechanicville - Schenectady: Since all of this portion of the route lies in the State of New York, and is now part of the newly established joint operation of PanAm Railways and Norfolk Southern Railroad's known as the "Patriot Corridor" no estimate for this section is available. There have been no recent discussions with the operating entity "PanAm Southern" (PAS) to introduce passenger service to that segment and what improvements would be necessary to do so. However, this segment of the route to Albany is included in an application submitted to Federal Railroad Administration (FRA) under its HSIPR "Track 3" Corridor Planning Initiative program. The joint "Track 3" application with New York State will look at the two routes to Rutland (CP to Whitehall and PAS to Hoosick Jct) to determine the costs of improvements as well as developing operating scenarios for multiple frequencies for this service. Should FRA select this project for funding, the planning work could be completed as early as spring 2011.

(2) Estimated total cost of operating a passenger rail service from Burlington to Rutland connecting to Whitehall, New York

During the development of the "Track 2" application, Amtrak prepared an operating cost estimate for the extension of the Ethan Allen Express from Rutland to Burlington. Based on the estimate provided, the first year operating deficit (State Subsidy) for the extended service would be $1,485,000 which is **$237,000 less** than the current (2009) Operating Subsidy. This is due to an anticipated 50% increase in ridership from the current level of 46,881 to 70,422 (see Attachment "E") that results in a substantial revenue increase, while at the same time seeing only modest increases of the cost of operation. The projected operating costs for the Burlington service from our HSIPR "Track 2" application are shown in Attachment "F".

(3) Estimated total cost of operating a passenger rail service from Burlington to Rutland to Bennington connecting to Albany, New York.

Since the Rutland - Hoosick Junction segment will be part of the study area included in our HSIPR Track 3 Planning Application, no recently developed operating cost or revenue projections are available. That information will be determined in the "service development plan" that is required by FRA in order to apply for future Corridor funding.

ATTACHMENTS

Attachment A Clarendon & Pittsford Mainline Track program

Attachment B VTR Rutland – Burlington Track Program

Attachment C VTR Hoosick Jct. – Manchester Track Program

Attachment D VTR Manchester – Rutland Track Program

Attachment E HSIPR Track 2 Application Operating Cost Projection

Attachment F HSIPR Track 2 Application Corridor Program Metrics

VERMONT AGENCY OF TRANSPORTATION
CLARENDON & PITTSFORD MAINLINE TRACK PROGRAM FOR STIMULUS FUNDING
WHITEHALL, NY TO RUTLAND, VT (M.P. 75.35 TO M.P. 99.79)
60 MPH PASSENGER SERVICE & 40 MPH FREIGHT SERVICE

Work Item	Unit	Quantity	Work Item Total	TOTAL Actual	TOTAL Rounded	Notes
Track Construction				$10,922,000	**$10,922,000**	
Furnish and Install Crossties	EA	22,500.0	$1,800,000			Approximately 1,000 Ties Per Mile
Furnish and Place Ballast Surface Course	T	30,000.0	$900,000			Approximately 1,350 Tons Per Mile
Surface Track	TM	23.0	$230,000			
Furnish and Install Continuous Welded Rail	TM	11.1	$7,992,000			Minimum Rail Section - 115 RE
Turnout Construction				$300,000	**$300,000**	
Furnish and Install No. 10 Turnouts	EA	3.0	$300,000			Sampson Undercut, Panelized Turnout
Bridge Construction				$200,000	**$200,000**	
Bridge Rehabilitation	LS	1.0	$200,000			Deck Replacement & Structural Work
Ditching, Drainage & Slope Stabilization				$1,000,000	**$1,000,000**	
Embankment Stabilization	TF	2,000.0	$600,000			Slurry Injection
Establish Railroad Ditches and Slopes	TM	6.0	$300,000			
Culvert Improvements	LS	1.0	$100,000			Repair / Replace (M.P. 78.00 & 88.20)
Grade Crossing Construction				$448,500	**$449,000**	
Furnish and Install Asphalt with Rubber Interface Grade Crossing Surface	TF	275.0	$82,500			Includes Excavation, 10' Timbers, Optional Underdrain & Asphalt & Rubber Interface
Furnish and Install Concrete Panel Grade Crossing Surface	TF	610.0	$366,000			Includes Excavation, 10' Timbers, Optional Underdrain & Concrete Panels w/ Rubber Interface
Train Control				$400,000	**$400,000**	
Grade Crossing Warning Signal Improvements	LS	1.0	$400,000			Includes Speed Predictors, New Signal Cases, Gates & LED Flashers
			SUBTOTAL	$13,270,500	**$13,271,000**	
Railroad Force Account (5%)				$663,525	**$664,000**	
			SUBTOTAL		**$13,935,000**	
Engineering (5%)				$696,750	**$697,000**	
			SUBTOTAL		**$14,632,000**	
Construction Inspection (5%)				$731,600	**$732,000**	
			SUBTOTAL		**$15,364,000**	
Administrative (5%)				$768,200	**$768,000**	
			SUBTOTAL		**$16,132,000**	
Contingency (10%)				$1,613,200	**$1,613,000**	
			TOTAL		**$17,745,000**	

ATTACHMENT A

VTrans Working to Get You There

VERMONT AGENCY OF TRANSPORTATION
ABRB CORRIDOR PROGRAM FOR STIMULUS FUNDING
RUTLAND, VT TO BURLINGTON, VT (M.P. 55.92 TO M.P. 121.91)
60 MPH PASSENGER SERVICE & 40 MPH FREIGHT SERVICE

Work Item	Unit	Quantity	Work Item Total	TOTAL Actual	TOTAL Rounded	Notes
Track Construction				$30,033,000	**$30,033,000**	
Furnish and Install Crossties	EA	40,850.0	$3,268,000			Approximately 1,000 Ties Per Mile
Furnish and Place Ballast Surface Course	T	52,400.0	$1,572,000			Approximately 1,000 Tons Per Mile
Surface Track	TM	52.4	$524,000			
Furnish and Install Continuous Welded Rail	TM	32.7	$23,544,000			Minimum Rail Section - 115 RE
Install Track - Jointed Rail	TF	7,500.0	$1,125,000			New Haven Siding Extension, Middlebury Passing Siding / Yard & Florence Siding
Turnout Construction				$4,550,000	**$4,550,000**	
Furnish and Install No. 10 Turnouts	EA	42.0	$4,200,000			
Furnish and Install No. 15 Turnouts	EA	2.0	$350,000			Middlebury Passing Siding, Includes Propane Switch Heater
Bridge Construction				$730,000	**$730,000**	
Bridge Rehabilitation	LS	1.0	$730,000			Bridge No.'s 212, 222, 228, 249, 252 & 261
Ditching, Drainage & Slope Stabilization				$650,000	**$650,000**	
Embankment Stabilization	TF	1,500.0	$450,000			Slurry Injection
Culvert Improvements	LS	1.0	$200,000			Repair / Replace (M.P. 78.00 & 88.20)
Grade Crossing Construction				$422,000	**$422,000**	
Furnish and Install Asphalt with Rubber Interface Grade Crossing Surface	TF	420.0	$147,000			Includes Excavation, 10' Timbers, Optional Underdrain, Asphalt & Rubber Interface
Furnish and Install Concrete Panel Grade Crossing Surface	TF	275.0	$275,000			Includes Excavation, 10' Timbers, Optional Underdrain, Asphalt & Concrete Panels w/ Rubber Interface
Train Control				$650,000	**$650,000**	
Wayside Signal Improvements	LS	1.0	$650,000			Includes Speed Predictors, Insulated Joints & Advanced Warning Signals
			SUBTOTAL	$37,035,000	**$37,035,000**	
Railroad Force Account (5%)				$1,851,750	**$1,852,000**	
			SUBTOTAL		**$38,887,000**	
Engineering (5%)				$1,944,350	**$1,944,000**	
			SUBTOTAL		**$40,831,000**	
Construction Inspection (5%)				$2,041,550	**$2,042,000**	
			SUBTOTAL		**$42,873,000**	
Administrative (5%)				$2,143,650	**$2,144,000**	
			SUBTOTAL		**$45,017,000**	
Contingency (10%)				$4,501,700	**$4,502,000**	
			TOTAL		**$49,519,000**	

ATTACHMENT B

VERMONT AGENCY OF TRANSPORTATION
TRACK PROGRAM FOR STIMULUS FUNDING
HOOSICK JCT TO MANCHESTER (M.P. H 0.00 TO M.P. 23.00)
60 MPH PASSENGER SERVICE & 40 MPH FREIGHT SERVICE

Work Item	Unit	Quantity	Total Cost	Program Year	Notes
Furnish and Install Crossties	EA	3,950.0	$316,000	2010	Approximately 1,500 Ties Per Mile
Surface Track	TM	28.0	$560,000	2010	Includes 1,000T of Ballast Per Mile
Purchase Continuous Welded Rail	TM	8.0	$3,800,000	2010	Minimum Rail Section - 115 RE
Install Continuous Welded Rail	TM	8.0	$1,960,000	2011	
Purchase Turnouts	EA	4.0	$200,000	2010	
Install Turnouts	EA	4.0	$160,000	2011	
Construct New Siding Tracks	EA	2.0	$660,000	2011	South Shaftsbury & N. Bennington Track 1
Bridge Improvements	EA	7.0	$530,000	2010	Deck Replacement & Structure Work (Per VRS)
Culvert Improvements	EA	3.0	$250,000	2010	Repair / Replace (M.P. 0.79, 7.20 & 8.50)
Install Grade Crossing Warning System	EA	3.0	$150,000	2010	M.P. H 0.90, H 2.21 & H 3.52 (Material on Hand)
Signal Improvements	LS	1.0	$200,000	2010	Includes Speed Predictors, Insulated Joints & Advanced Warning Signals

2010 Total Estimated Cost	**$6,006,000**
2011 Total Estimated Cost	**$2,780,000**
Hoosick Jct to Manchester Total Estimated Cost	**$8,786,000**

ATTACHMENT C

VERMONT AGENCY OF TRANSPORTATION
TRACK PROGRAM FOR STIMULUS FUNDING
MANCHESTER TO RUTLAND (M.P. H 23.00 TO M.P. 54.27)
60 MPH PASSENGER SERVICE & 40 MPH FREIGHT SERVICE

Work Item	Unit	Quantity	Total Cost	Program Year	Notes
Furnish and Install Crossties	EA	28,000.0	$2,240,000	2010	Approximately 1,500 Ties Per Mile
Surface Track	TM	31.3	$626,000	2010	Includes 1,000T of Ballast Per Mile
Purchase Continuous Welded Rail	TM	31.3	$14,867,500	2010	Minimum Rail Section - 115 RE
Install Continuous Welded Rail	TM	31.3	$7,668,500	2011	
Purchase Turnouts	EA	23.0	$1,150,000	2010	
Install Turnouts	EA	23.0	$920,000	2011	
Rehabilitate Siding Tracks	EA	2.0	$100,000	2011	Danby & South Wallingford
Bridge Improvements	EA	3.0	$135,000	2010	Deck Replacement & Structure Work (Per VRS)
Culvert Improvements	EA	12.0	$250,000	2010	Repair / Replace
Install Grade Crossing Surface	EA	28.0	$840,000	2010	
Signal Improvements	LS	1.0	$300,000	2010	Includes Speed Predictors, Insulated Joints & Advanced Warning Signals

2010 Total Estimated Cost	**$20,408,500**
2011 Total Estimated Cost	**$8,688,500**
Manchester to Rutland Total Estimated Cost	**$29,097,000**

ATTACHMENT D

Funding Requirement (as identified on the Supporting Form)	**Baseline Actual-FY 2009 Levels** (State operating subsidy for FY 2009 if existing service)	**Projected Totals by Year ($ Millions Year Of Expenditure (YOE)* Dollars - One Decimal)**		
		First full year of operation	**Fifth full year of operation**	**Tenth full year of operation**
Indicate the Fiscal Year	2009	2012	2017	2022
Surplus/deficit after capital asset renewal charge[5]	$1,722,000	1,485,000	1,779,000	2,084,000
Total Non-FRA sources of funds applicable to the surplus/deficit after capital asset renewal	$1,722,000	1,485,000	1,779,000	2,084,000
Funding Requirements for which Available Funds Are Not Identified	0	0	0	0

* Year-of-Expenditure (YOE) dollars are inflated from the base year. Applicants should include their proposed inflation assumptions (and methodology, if applicable) in the supporting documentation.

Note: Data reported in this section should be consistent with the information provided in the Operating and Financial Performance supporting form for this application.

[5] The "capital asset renewal charge" is an annualized provision for **future** asset replacement, refurbishment, and expansion. It is the annualized equivalent to the "continuing investments" defined in the FRA's Commercial Feasibility Study of high-speed ground transportation (*High-Speed Ground Transportation for America,* September 1997, available at http://www.fra.dot.gov/us/content/515 (see pages 5-6 and 5-7).

Corridor Program Metric	Actual – FY 2008 levels	Projected Totals by Year: First full year of operation	Fifth full year of operation	Tenth full year of operation
Annual passenger-trips	46,881	70,422	75,631	82,687
Annual passenger-miles (millions)	8,953,118	17,511,000	18,806,244	20,560,845
Annual IPR seat-miles offered (millions)	20,655,433	34,759,000	34,759,033	34,759,033
Average number of daily round trip train operations (typical weekday)	1	1	1	1
On-time performance (OTP)[2]– percent of trains on time at endpoint terminals	39%	90%	90%	90%
Average train operating delays: minutes of en-route delays per 10,000 train-miles[3]	5,676	2,275	2,275	2,275
Top passenger train operating speed (mph)	110	110	110	110
Average scheduled operating speed (mph) (between endpoint terminals)	32.43	39.15	39.15	39.15

[2] 'On-time' is defined as within the distance-based thresholds originally issued by the Interstate Commerce Commission, which are: 0 to 250 miles and all Acela trains—10 minutes; 251 to 350 miles—15 minutes; 351 to 450 miles—20 minutes; 451 to 550 miles—25 minutes; and 551 or more miles—30 minutes.

[3] As calculated by Amtrak according to its existing procedures and definitions. Useful background (but not the exact measure cited on a route-by-route basis) can be found at pages E-1 through E-6 of Amtrak's May 2009 Monthly Performance Report at http://www.amtrak.com/pdf/0905monthly.pdf